

LABORATORY STUDY OF EVALUATING DIRECT TENSILE PROPERTIES OF ASPHALT MIXTURES ON REFLECTIVE CRACKS

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ABSTRACT

One of the most important problems in pavements rehabilitation is detecting of reflective cracks when paved new HMA overlay paved on old pavement. Studies represent the complexity of the problem and the fact that these kinds of cracks are a variable and complex phenomenon. Usually, this failure spread from the lower layers to the overlay and it may cause from wheels loads stresses, stresses due to temperature gradient, volume variation of lower layers or all three combination. After the studying on reflective cracks mechanism it demonstrated that tensile stress due to wheel loads passage is one of the main factors that causing these cracks. So in this experimental research, the performance of different flexible asphalt mixture to increase tensile strength of mixtures has been evaluated, and then we evaluated the tensile strength of variable sample against on reflective cracks comparative, which due to decrease the tensile strength of mixture. Four type of Asphalt including sulfuric, mastic, recycled rubber and geosynthetic reinforced has been studied. Analysis shows that the samples of mixture have different affect on increasing tensile strength in asphalt mixtures. In this research we prepared mastic, sulfuric (with 50%) and geogrid reinforced increased tensile strength has been observed compared to other sample; moreover we evaluated the effect of loading rate on increasing the tensile strength.